# RSET
# Sediment Quality Guidelines Subcommittee

Topic 1. Evaluate Cost-effectiveness and reliability of SQGs

- Primarily the cost of false positives, e.g., DMMP “test out”
- PSDDA EPTA may be useful as example
- Need SL/ML levels before costs can be identified
  - Narrative definition of the ML needed
  - Ecology CSL analogous?

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Assignments:

- Unit costs for chemistry, bioassays, benthos and bioaccumulation
- ML Definition
- Presentation of Ecology FW reliability analyses

Recommendations:

- Delay cost-effectiveness evaluation after reliability analyses
- Prioritize identification of proposed SL/MLs & reliability

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Unit Costs

Chemistry – $880 - $1500

- Metals $105 - $185
- Semivols $300 - $600
- Pesticides $145 - $200
- Conventionals $145 - $190
- TBT  $185 - $325

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Unit Costs (Prices vary on number of samples)

Bioassays

- *Hyalella 10-day / 28-day - $580/$850*
- *Chironomus 10-day / 20-day - $650/$830*
- Microtox (Freshwater/porewater) $200 - $250

Benthos (Per DMMP) $202 - $390 / sample for identification to lowest possible taxa

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ML Definition: Background info

**PSDDA/DMMP:**

- **Site condition 2 –** Minor adverse effects. No significant acute toxicity onsite.
- **Biological Disposal Guidelines**
- No two bioassays exhibiting the above conditions; or no one bioassay response greater than 30 percent over reference conditions and statistically significant with respect to reference conditions; water column larval response does not exceed 0.01 of the LC50 after 4-hour mixing; and no bioaccumulation levels exceeding a human health tissue guideline value.
- **Chemical Disposal Guidelines**
- ML2, defined as the highest AET for a series of biological indicators (i.e., higher concentrations are expected to result in effects measured by all of the biological indicators).

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## ML Biological Definition:

- Recommend use of CSL biological definition
- Based on ASTM protocols / round robin testing

**Table 2-2. SQS and CSL Endpoints for Biological Tests**

| Test | QA Control | QA Reference | SQS | CSL |
|---|---|---|---|---|
| *Hyalella azteca* 10-day mortality | C ≤ 20% | R ≤ 25% | T – R > 10% | T – R > 25% |
| *Chironomus tentans* 10-day mortality | C ≤ 30% | R ≤ 30% | T – R > 10% | T – R > 25% |
| *Chironomus tentans* 10-day growth | CF ≥ 0.48 mg/ind | RF/CF ≥ 0.8 | T/R < 0.8 | T/R < 0.7 |
| Microtox® decrease in luminescence | CF/CI ≥ 0.72, CF/CI ≤ 1.1 | RF/CF ≥ 0.8, RF/CF ≤ 1.1 | T/R < 0.85 | T/R < 0.75 |

C = Control, CI = Control Initial, CF = Control Final
R = Reference, RF = Reference Final
T = Test Sample

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ML Chemical Recommendation:

;Recommend use of Floating Percentile values for increased reliability

;Focus on 80% - 85% Sensitivity

**Table 3-10. Floating Percentile Results for the CSL Effects Level**

| Measure of Reliability (%) | 95% Sensitivity | 90% Sensitivity | 85% Sensitivity | 80% Sensitivity | 75% Sensitivity |
|---|---|---|---|---|---|
| False Negatives | 5 / 5 | 10 / 10 | 15 / 15 | 20 / 20 | 25 / 25 |
| False Positives | 50 / 50 | 37 / 44 | 26 / 24 | 23 / 17 | 21 / 16 |
| Sensitivity | 95 / 95 | 90 / 90 | 85 / 85 | 80 / 80 | 75 / 75 |
| 2003 Efficiency | 50 / 50 | 63 / 56 | 74 / 76 | 77 / 83 | 79 / 84 |
| 1988 Efficiency | 66 / 65 | 71 / 67 | 76 / 78 | 77 / 82 | 78 / 83 |
| Overall Reliability | 73 / 72 | 77 / 73 | 80 / 81 | 79 / 82 | 78 / 80 |

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Topic 2. Develop regional data compilation / database strategy
Topic 3. Develop database structure and format

- Topics combined
- Alternative systems
  - Ecology's Sedqual
  - NOAA's Query Manager
  - Seattle Corps' DAIS
- Issues
  - Custodial organization – staff / management responsibilities
  - Ownership / management of intellectual property (source code)
  - Data access and submittal

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Assignments:

- DAIS Columbia / fresh data sets
- Query manager status

Recommendations:

- Strong agreement for SEDQUAL
- RSET must identify custodial agency/duties
- RSET should identify future needs/funding for mods to SEDQUAL

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Topic 4. Evaluate Ecology's FW sediment values and reliability –

Topic tabled. Teresa will present methods and results of Phase 2 report

Topic 5. Conduct field verification of FW Screening Levels

- Dependent on current / future data
- Ecology's reliability report for known data
- New data – Willamette nav lane, Willamette/Duwamish Superfund

Recommendation: Identify long-term field verification approach and data types needed

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Topic 6. Identify beneficial use specific SLs

Recommendation: Delay this task for RSET beneficial use subcommittee recommendations

Topic 7. Develop reference site evaluation process

- Complicated by freshwater sediment heterogeneity and inconsistent bioassay performance
- PSEP 1989 Reference study is one model

Recommendation: RSET should select approach / identify data needs

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Task 8. Develop disposal site-specific screening levels

Recommendation: Delay until SL/MLs have been selected. Perhaps SLs may vary between sites.